



CONSULTING ENGINEERS & GEOLOGISTS, INC.

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Reference: 004323

March 8, 2006

Mr. Mark Verhey
Humboldt County Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

Subject: First Quarter 2006 Groundwater Monitoring Report, Former Rio Dell Texaco, 100 Wildwood Avenue; LOP No. 12691

Introduction

This letter report comprises the first quarter 2006 groundwater monitoring report for the former Rio Dell Texaco, Rio Dell, Humboldt County, California. This report includes a brief discussion on the background of the site, field activities, groundwater monitoring results, and discussion and recommendations. This work is being performed at the request of the Humboldt County Division of Environmental Health (HCDEH).

Vicinity Information

The site is located at 100 Wildwood Avenue in Rio Dell, Humboldt County, California, at the northeast corner of the intersection of Wildwood Avenue and Edwards Drive (Figure 1). A site plan is included as Figure 2.

Background

In December 1990, a 200-gallon waste-oil Underground Storage Tank (UST) was removed from the site. Contaminated soils were excavated from the vicinity of the waste oil UST in August 1992. Laboratory analytical results of soil and groundwater samples collected during the overexcavation indicated the presence of petroleum hydrocarbons in soil, but not in groundwater. In November 1996, the HCDEH issued a remedial action completion certificate for the waste-oil UST (LACO, 1998).

In September and October 1998, Northcoast Environmental Construction removed 6 USTs from the site. Low concentrations of petroleum hydrocarbons were detected in several soil samples from the excavation cavities (LACO, 1998). In February 2000, LACO Associates (LACO) installed 6 soil borings (B-1 through B-6) and 4 monitoring wells (MW-1 through MW-4), and initiated quarterly groundwater monitoring and sampling (LACO, 2000).

In 2001, LACO performed a sensitive receptor survey for a 1,000-foot radius from the site. Two active wells were identified within the search area; one well was reportedly used for irrigation, the other for domestic use and irrigation. Both wells are located cross-gradient of the site (LACO, February 2002).

In March and April 2002, LACO installed 8 additional soil borings/temporary well points (B-7 through B-14) at the site (LACO, June 2002).

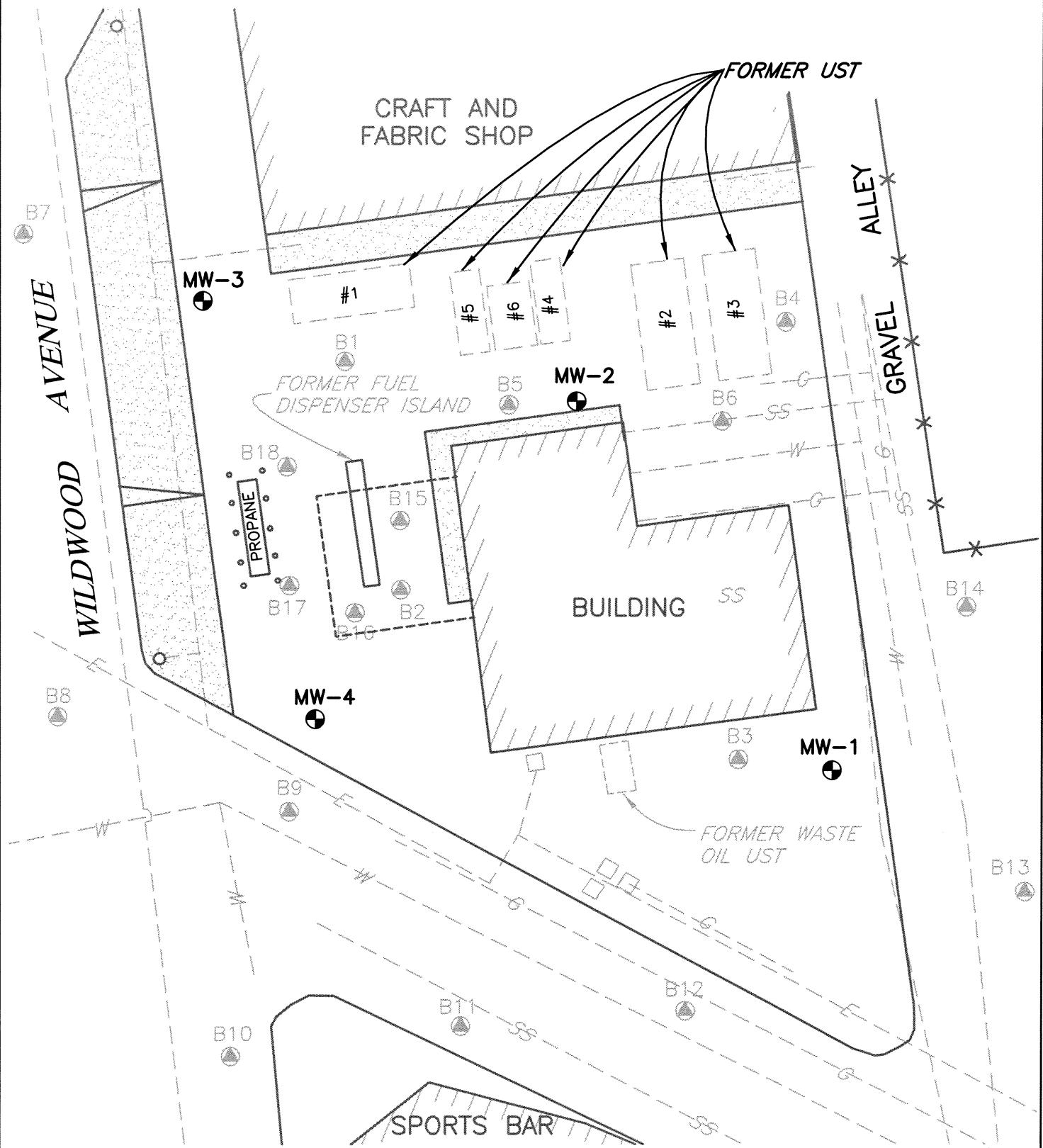


SOURCE: SCOTIA AND RIO DELL
USGS 7.5 MINUTE QUADRANGLES

1" = 1,500' ±

SW Consulting Engineers & Geologists, Inc.	Former Rio Dell Texaco Rio Dell, California	Site Location Map SHN 004323
	January, 2005	004323-FIG-1

Figure 1



EXPLANATION

MW MONITORING WELL
LOCATION AND DESIGNATION
B SOIL BORING
LOCATION AND DESIGNATION

NOTE

BASE MAPPING, MONITORING WELLS
AND SOIL BORING LOCATIONS FROM
LACO ASSOCIATES, 9/22/04.

0 1"=20' 20'

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In January 2004, LACO installed 4 additional soil borings/temporary well points (B-15 through B-18) at the site (LACO, 2004).

Historic groundwater monitoring data collected by LACO are included in Attachment 1.

Field Activities

Monitoring Well Sampling

On February 6, 2006, SHN Consulting Engineers & Geologists, Inc. (SHN) conducted quarterly groundwater monitoring of site monitoring wells MW-1 through MW-4. Prior to sample collection, each well was checked for the presence of free product (none was observed), and measured for depth to groundwater to the nearest 0.01 foot. Approximately 3 casing volumes of water were subsequently purged from each monitoring well, using a disposable bailer. Electrical conductivity, pH, and temperature were monitored periodically during purging activities using portable instrumentation. Each groundwater well was also monitored for Dissolved Oxygen (DO) and Dissolved Carbon Dioxide (DCO₂). Oxidation-Reduction Potential (ORP) measurements were not taken during this monitoring event, due to a malfunctioning ORP meter.

Groundwater samples were collected from each monitoring well, using disposable polyethylene bailers, and transferred into laboratory-supplied bottles. The water samples were then labeled, stored in an iced cooler, and transported to the analytical laboratory under proper chain-of-custody documentation. Groundwater monitoring data sheets are included in Attachment 2.

Laboratory Analysis

Each groundwater sample was analyzed for Total Petroleum Hydrocarbons as Gasoline (TPHG); Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX); Methyl Tertiary-Butyl Ether (MTBE); Tertiary-Butyl Alcohol (TBA); Diisopropyl Ether (DIPE); Ethyl Tertiary-Butyl Ether (ETBE); and Tertiary-Amyl Methyl Ether (TAME), in general accordance with United States Environmental Protection Agency (EPA) Method No. 8260B.

Groundwater samples were submitted to North Coast Laboratories, Inc., a State of California-certified analytical laboratory located in Arcata, California.

Equipment Decontamination Procedures

All small equipment that required on-site cleaning was cleaned using the triple-wash system. The equipment was first washed in a water solution containing Liquinox® cleaner, followed by a distilled water rinse, then by a second distilled water rinse.

Investigation-Derived Waste Management

Water used in the decontamination of equipment, tools, and all purge water was contained in Department of Transportation-approved DOT 17E/H, 55-gallon drums. The water was transported to SHN's purge water storage facility and will be discharged, under permit, to the City of Eureka wastewater collection system. A total of 21 gallons of water were generated during this monitoring event. A discharge receipt will be included in a future report. A discharge receipt for the purge water from November 4, 2005, groundwater monitoring activities is included in Attachment 2.

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Groundwater Monitoring Results

Hydrogeology

Depth-to-groundwater measurements were collected on February 6, 2006. The direction of groundwater flow was to the southeast with an approximate gradient of 0.11 (Figure 3).

Groundwater elevations are presented in Table 1. Historic groundwater elevation data collected by SHN are included in Attachment 3.

Table 1 Groundwater Elevations, February 6, 2006 Former Rio Dell Texaco, Rio Dell, California			
Sample Location	Top of Casing Elevation (feet)¹	Depth to Water (feet)²	Groundwater Elevation (feet)¹
MW-1	139.06	7.23	131.83
MW-2	139.83	3.10	136.73
MW-3	139.87	1.58	138.29
MW-4	139.00	7.80	131.20

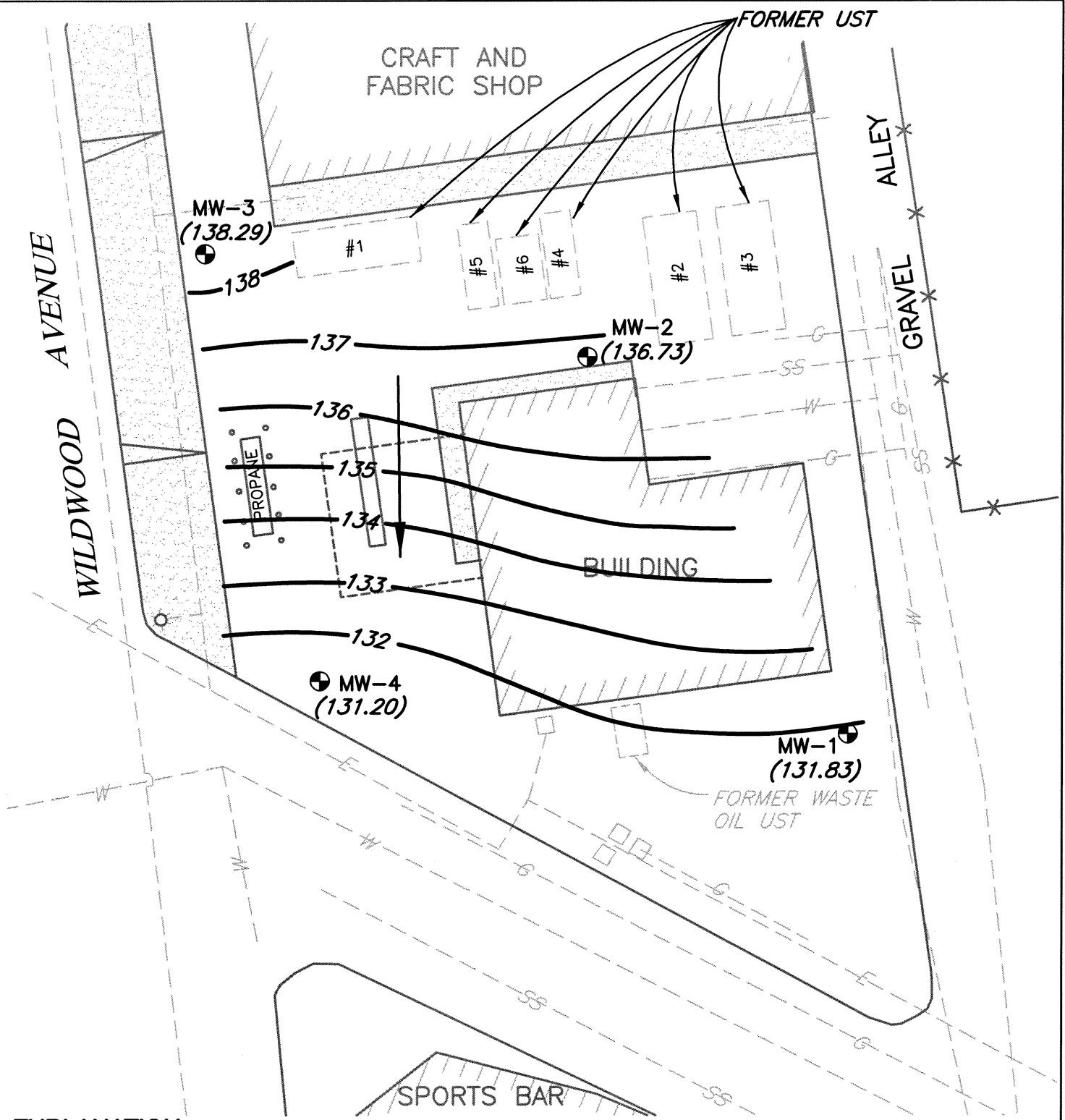
1. Referenced to NAVD88 2. Below top of casing

Groundwater Analytical Results

Groundwater was sampled from each well on February 6, 2006. Analytical results are presented in Table 2 and summarized on Figure 4. Historic groundwater analytical data collected by SHN are included in Attachment 3. The laboratory analytical report is presented in Attachment 4.

Table 2 Groundwater Analytical Results, February 6, 2006 Former Rio Dell Texaco; Rio Dell, California (in ug/L)¹										
Sample Location	TPHG²	B²	T²	E²	X²	MTBE²	TBA²	DIPE²	ETBE²	TAME²
MW-1	<50 ³	<0.50	<0.50	<0.50	<0.50	<1.0	<20 ⁴	<1.0	<1.0	<1.0
MW-2	<50	<0.50	<0.50	<0.50	<0.50	13	<20	<1.0	<1.0	<1.0
MW-3	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<20	<1.0	<1.0	<1.0
MW-4	440 ⁵	<0.50	<0.50	<0.50	<0.50	340	<20	<1.0	<1.0	4.6

1. ug/L: micrograms per Liter
2. Total Petroleum Hydrocarbons as Gasoline (TPHG); Benzene (B), Toluene (T), Ethylbenzene (E), total Xylenes (X); Methyl Tertiary-Butyl Ether (MTBE); Tertiary-Butyl Alcohol (TBA); Diisopropyl Ether (DIPE); Ethyl Tertiary-Butyl Ether (ETBE); and Tertiary-Amyl Methyl Ether (TAME) analyzed in general accordance with United States Environmental Protection Agency (EPA) Method No. 8260B
3. <: Denotes a value that is "less than" the method detection limit.
4. The reporting limit for TBA was raised due to loss of instrument sensitivity.
5. The reported gasoline value is primarily the result of reported gasoline additives present in the sample.



EXPLANATION

**MW-2 MONITORING WELL
LOCATION AND DESIGNATION**

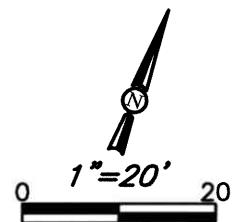
**(129.70) GROUNDWATER ELEVATION
IN FEET (MSL)**

—132— GROUNDWATER CONTOUR

**← APPROXIMATE DIRECTION
OF GROUNDWATER FLOW**

NOTE

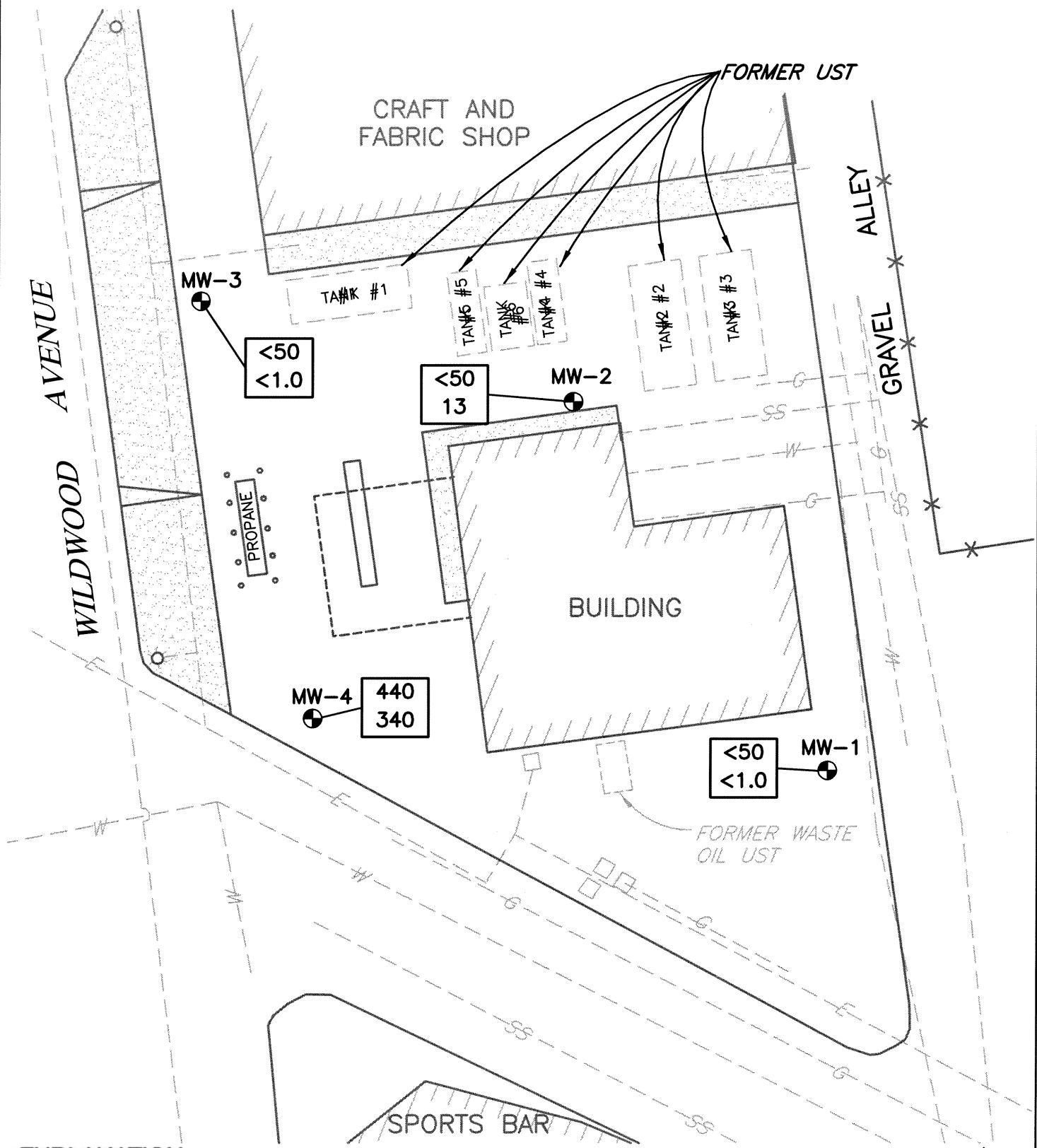
**BASE MAPPING, MONITORING WELLS
AND SOIL BORING LOCATIONS FROM
LACO ASSOCIATES, 9/22/04.**



Consulting Engineers
& Geologists, Inc.

Former Rio Dell Texaco
Rio Dell, California

Groundwater Contours on
February 6, 2006
SHN 004323



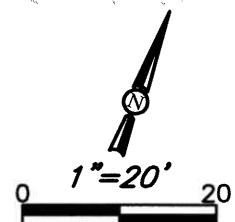
EXPLANATION

MW2 MONITORING WELL LOCATION AND DESIGNATION

<50 TPHG RESULTS IN ug/L
<1.0 MTBE

NOTE

BASE MAPPING, MONITORING WELLS AND SOIL BORING LOCATIONS FROM LACO ASSOCIATES, 9/22/04.



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Natural Attenuation Parameters

DO and DCO₂ were measured in the monitoring wells prior to sampling. Results are presented in Table 3.

Table 3 DCO₂ and DO Measurement Results, February 6, 2006 Former Rio Dell Texaco, Rio Dell, California		
Sample Location	DCO₂¹ (ppm)²	DO³ (ppm)
MW-1	50	5.02
MW-2	45	3.27
MW-3	35	3.50
MW-4	200	4.18

1. DCO₂: Dissolved Carbon Dioxide, field measured using a field test kit
2. ppm: parts per million
3. DO: Dissolved Oxygen measured using portable instrumentation

The DCO₂ measurements ranged from 35 ppm in well MW-3 to 200 ppm in well MW-4. DO measurements ranged from 3.27 ppm in well MW-2 to 5.02 ppm in well MW-1. These results indicate that biodegradation is occurring at the site. Historic DO, ORP, and DCO₂ measurement results collected by SHN are included in Attachment 3.

Discussion and Recommendations

TPHG was detected in the groundwater sample from monitoring well MW-4. However, the analytical laboratory noted that the reported TPHG concentration was actually fuel oxygenate constituents that eluted in the TPHG range of molecular weights. Due to the similarity in TPHG concentrations to MTBE concentrations found in site wells, it appears that petroleum hydrocarbons being reported as TPHG is actually MTBE that is eluting in the TPHG range of molecular weights.

The biodegradation indicators indicate that biodegradation of petroleum hydrocarbons is occurring.

In October 2005, SHN supervised the installation of 7 membrane interface probe borings, 5 soil borings, and 3 temporary well points. Soil and groundwater samples were collected for a chemical oxidation treatability study. SHN has received the results of the treatability study and is currently preparing a report of findings. This information will be used to propose and design a remediation plan for the site.

SHN will continue groundwater monitoring, as required by the HCDEH. Prior to groundwater sampling, wells will be checked for depth to water, and monitored for DO, DCO₂, and ORP. Wells will be purged of approximately 3 well casing volumes prior to sampling. During well purging, groundwater will be monitored for temperature, pH, and conductivity. Groundwater samples will be analyzed for TPHG, BTEX, and fuel oxygenates.

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SHN will complete and submit the next quarterly monitoring report no later than 60 days following the quarterly sampling event. The report will include a description of the monitoring and sampling activities, a summary of results, analytical reports, groundwater elevations, and a groundwater contour map. The next quarterly groundwater-monitoring event is scheduled for May 2006.

If you have any questions regarding the work completed, please call me at 707/441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.



Frans Lowman, P.G.

Project Manager

FBL/JL:med

Attachments: 1. Historic Monitoring Data Collected by LACO

2. Field Notes

3. Historic Monitoring Data Collected by SHN

4. Laboratory Analytical Report

copy w/attach: Ms. Dorothy Bianchi

References Cited

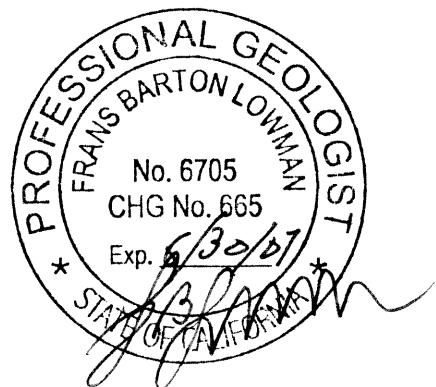
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---. (February 2002). *Results of Sensitive Receptor Survey, Former Rio Dell Texaco*. Eureka: LACO.

---. (June 2002). *Subsurface Investigation Status Report, Report of Findings: Boring Installation, Former Rio Dell Texaco*. Eureka: LACO.

---. (February 2004). *Subsurface Investigation Status Report, Former Rio Dell Texaco*. Eureka: LACO.



Attachment 1

Historic Monitoring Data Collected by LACO

TABLE 1: WELL DATA AND GROUNDWATER ANALYTICAL RESULTS
Former Rio Dell Texaco, 100 Wildwood Ave, Rio Dell, Ca
LACo No. 3554.03; LOP No. 12691

WELL/ Sample Date	Groundwater Measurements			Analytical Results							
	Well Head Elevation (feet, NAVD88)	Ground water Elevation (feet, NAVD88)	Depth to Water (feet)	TPHg ($\mu\text{g/L}$)	TPHd ($\mu\text{g/L}$)	Benzene ($\mu\text{g/L}$)	Toluene ($\mu\text{g/L}$)	Ethylbenzene ($\mu\text{g/L}$)	Xylenes ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	Other Analytes ($\mu\text{g/L}$)
MW-1	139.06										
2/24/2000	132.61	6.45		ND<50	—	ND<0.50	ND<0.50	ND<0.50	1.2	4.3	ND<0.50-50
3/21/2000	132.00	7.06		—	—	—	—	—	—	—	—
4/18/2000	131.49	7.57		—	—	—	—	—	—	—	—
5/26/2000	131.19	7.87		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	2.5	ND<0.50-50
6/30/2000	130.52	8.54		—	—	—	—	—	—	—	—
7/31/2000	131.27	7.79		—	—	—	—	—	—	—	—
8/30/2000	128.45	10.61		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	88	1,2-Dichloroethane = 0.34
9/22/2000	128.14	10.92		—	—	—	—	—	—	—	—
10/26/2000	127.98	11.08		—	—	—	—	—	—	—	—
11/24/00	129.81	9.25		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	7.8	ND<0.50-50
12/12/2000	130.25	8.81		—	—	—	—	—	—	—	—
1/12/2001	131.44	7.62		—	—	—	—	—	—	—	—
2/22/2001	132.33	6.73		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50-50
4/5/2001	131.38	7.68		—	—	—	—	—	—	—	—
5/2/2001	131.16	7.90		—	—	—	—	—	—	—	—
5/22/2001	130.73	8.33		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	4.1	ND<0.50-50
6/11/2001	130.08	8.98		—	—	—	—	—	—	—	—
7/6/2001	129.87	9.19		—	—	—	—	—	—	—	—
9/4/2001	127.97	11.09		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	120	1,2-Dichloroethane = 13
11/29/2001	131.27	7.79		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	0.61	ND<0.50-50
2/28/2002	131.80	7.26		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	2.6	ND<0.50-50
5/20/2002	130.77	8.29		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	2.3	ND<0.50-50
8/8/2002	128.51	10.55		53	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	100	ND<0.50-50
Monitoring well top of casings resurveyed 8/15/02											
12/6/2002	128.48	10.58		66	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	90	TBA = 110
2/24/2003	131.67	7.39		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1,2-Dichloroethane = 1.0
5/15/2003	131.33	7.73		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	7.0	All others ND<1.0 ND<0.50-50
8/11/2003	129.58	9.48		ND<50	—	ND<0.50	ND<0.50	ND<0.50	1.43	36.0	ND<1.0-20
11/11/2003	129.15	9.91		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	4.4	ND<1.0-20
2/17/2004	132.19	6.87		—	—	—	—	—	—	—	—
5/10/2004	131.48	7.58		—	—	—	—	—	—	—	—
8/17/2004	128.47	10.59		94	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	87	ND<1.0-10
MW-2	139.83										
2/24/2000	137.21	2.62		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	92	TAME = 0.66
3/21/2000	137.28	2.55		—	—	—	—	—	—	—	1,2-Dichloroethane = 2.8
4/18/2000	137.82	2.01		—	—	—	—	—	—	—	All others ND<0.50-50
5/16/2000	NA	NA		330	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	33	ND<0.50 to 100
6/30/2000	NA	NA		—	—	—	—	—	—	—	—
7/31/2000	NA	NA		—	—	—	—	—	—	—	—
8/30/2000	126.18	10.63		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	100	TAME = 0.99
9/22/2000	inaccessible			—	—	—	—	—	—	—	1,2-Dichloroethane = 2.9
10/26/2000	inaccessible			—	—	—	—	—	—	—	All others ND<0.50-50
11/24/00	134.78	5.05		100	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	37	TAME = 0.55
12/12/2000	136.02	3.81		—	—	—	—	—	—	—	1,2-Dichloroethane = 0.71
1/12/2001	136.27	3.56		—	—	—	—	—	—	—	All others ND<0.50-50
2/22/2001	136.53	3.30		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	44	TAME = 0.58
4/5/2001	136.50	3.33		—	—	—	—	—	—	—	1,2-Dichloroethane = 2.3
5/2/2001	136.34	3.49		—	—	—	—	—	—	—	All others ND<0.50-50
5/22/2001	135.09	4.74		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	65	1,1-Dichloroethane = 2.1
6/11/2001	134.38	5.45		—	—	—	—	—	—	—	All others ND<0.50-50
7/6/2001	134.17	5.66		—	—	—	—	—	—	—	—
9/4/2001	132.42	7.41		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	58	TAME = 2.2
											1,2-Dichloroethane = 2.4
											All others ND<0.50-50

TABLE 1: WELL DATA AND GROUNDWATER ANALYSIS
Former Rio Dell Texaco, 100 Wildwood Ave, Rio Dell, Ca
LACO No. J554.03; LOP No.12691

TEST RESULTS

WELL/ Sample Date	Groundwater Measurements			Analytical Results							
	Well Head Elevation (feet, NAVD88)	Ground water elevation (feet, NAVD88)	Depth to Water (feet)	TPHg ($\mu\text{g/L}$)	TPHd ($\mu\text{g/L}$)	Benzene ($\mu\text{g/L}$)	Toluene ($\mu\text{g/L}$)	Ethylbenzene ($\mu\text{g/L}$)	Xylenes ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	Other Analytes ($\mu\text{g/L}$)
MW2 continued											
11/29/2001	136.87	2.96		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	35	TAME = 1.2 1,1-Dichloroethane=2.8 All others ND<0.50-50
2/28/2002	136.56	3.27		100	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	33	TAME = 1.2 1,1-Dichloroethane=2.2 All others ND<0.50-50
5/20/2002	134.88	4.95		57	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	37	TAME = 2.1 1,1-Dichloroethane=2.1 All others ND<0.50-50
8/8/2002	133.03	6.80		120	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	21	TAME = 1.2 1,1-Dichloroethane=1.2 All others ND<0.50-50
Monitoring well top of casings resurveyed 8/15/02											
12/6/2002	133.04	6.79		59	ND<50	0.62	0.98	0.60	1.95	41	TAME=2.4 1,1-Dichloroethane=3.1 All others ND<1.0-30
2/24/2003	136.49	3.34		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	26	TAME=1.7 1,1-Dichloroethane=2.8 All others ND<1.0-30
5/15/2003	136.44	3.39		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	21	TAME=1.2 1,1-Dichloroethane=2.1 All others ND<1.0-20
8/11/2003	133.90	5.93		150	—	ND<0.50	ND<0.50	ND<0.50	0.70	9.5	ND<1.0-20
11/11/2003	134.11	5.72		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	18	TAME=1.2 1,1-Dichloroethane=1.3 All others ND<1.0-30
2/17/2004	136.35	2.71		—	—	—	—	—	—	—	—
5/10/2004	135.88	3.18		—	—	—	—	—	—	—	—
8/17/2004	132.28	6.78		120	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	6.9	ND<1.0-10
MW-3											
2/24/2000	139.87	1.60		ND<50	—	ND<0.50	ND<0.50	ND<0.50	1	21	ND<0.50-50
3/21/2000	137.87	2.00		—	—	—	—	—	—	—	—
4/18/2000	138.20	1.67		—	—	—	—	—	—	—	—
5/26/2000	137.51	1.36		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	9.8	ND<0.50-50
6/30/2000	136.74	3.13		—	—	—	—	—	—	—	—
7/31/2000	135.42	4.45		—	—	—	—	—	—	—	—
8/30/2000	134.37	5.50		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	17	ND<1.5-50
9/22/2000	134.34	5.53		—	—	—	—	—	—	—	—
10/26/2000	135.28	4.59		—	—	—	—	—	—	—	—
11/24/00	137.27	2.60		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	17	ND<0.50-50
12/12/2000	137.43	2.44		—	—	—	—	—	—	—	—
1/12/2001	138.06	1.81		—	—	—	—	—	—	—	—
2/21/2001	137.99	1.88		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	0.61	ND<0.50-50
4/5/2001	138.00	1.87		—	—	—	—	—	—	—	—
5/2/2001	137.76	2.11		—	—	—	—	—	—	—	—
5/22/2001	137.01	2.86		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	4.1	ND<0.50-50
6/11/2001	136.28	3.59		—	—	—	—	—	—	—	—
7/6/2001	136.15	3.72		—	—	—	—	—	—	—	—
9/4/2001	134.07	5.80		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	6.4	All ND<0.50-500 Methane=77 All others ND<0.50-50
11/19/2001	137.79	2.08		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	3.8	—
2/28/2002	138.02	1.85		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	2.2	All ND<0.50-50
5/20/2002	137.62	2.25		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.4	All ND<0.50-50
8/8/2002	134.89	4.98		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.6	All ND<0.50-50
	139.87			Monitoring well top of casings resurveyed 8/15/02							
12/6/2002	135.38	4.49		ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	4.2	All ND<0.50-20
2/24/2003	138.03	1.84		ND<50	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.0	All ND<0.50-20
5/15/2003	138.22	1.65		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	All ND<0.50-20
8/11/2003	135.69	4.18		ND<50	—	ND<0.50	ND<0.50	ND<0.50	0.75	1.5	ND<1.0-20
11/11/2003	136.76	3.11		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.5	ND<1.0-20
2/17/2004	137.89	1.17		—	—	—	—	—	—	—	—
5/10/2004	137.58	1.48		—	—	—	—	—	—	—	—
8/17/2004	134.07	4.99		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<1.0-10
MW-4											
2/24/2000	131.12	7.88		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	350	TAME = 2.8 1,1-Dichloroethane=28 All others ND<0.50-500
3/21/2000	133.16	5.84		—	—	—	—	—	—	—	—
4/18/2000	133.40	5.60		—	—	—	—	—	—	—	—

TABLE 1: WELL DATA AND GROUNDWATER ANALYSIS
Former Rio Dell Texaco, 100 Wildwood Ave, Rio Dell, CA
LACO No. 3554.03; LOP No.12691

RESULTS

WELL/ Sample Date	Groundwater Measurements			Analytical Results							
	Well Head Elevation (feet, NAVD88)	Ground water Elevation (feet, NAVD88)	Depth to Water (feet)	TPHg ($\mu\text{g/L}$)	TPHd ($\mu\text{g/L}$)	Benzene ($\mu\text{g/L}$)	Toluene ($\mu\text{g/L}$)	Ethylbenzene ($\mu\text{g/L}$)	Xylenes ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	Other Analytes ($\mu\text{g/L}$)
MW-4 cont'd											
5/26/2000	133.30	5.70		1,000		ND<2.0	ND<2.0	6	ND<2.0	230	TAME = 2.5 TBA = 44 All others ND<2.0 to 1000
6/30/2000	132.67	6.33		—	—	—	—	—	—	—	—
7/31/2000	132.38	6.62		—	—	—	—	—	—	—	—
8/30/2000	129.45	6.52		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	220	TAME = 3.9 1,2-Dichloroethane=20 TBA = 5.6
9/22/2000	130.55	8.45		—	—	—	—	—	—	—	—
10/26/2000	130.38	8.62		—	—	—	—	—	—	—	—
11/24/00	131.82	7.18		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	620	TAME = 6.1 1,2-Dichloroethane=16 TBA = 9.6
12/12/2000	132.31	6.69		—	—	—	—	—	—	—	—
1/12/2001	132.83	6.17		—	—	—	—	—	—	—	—
2/22/2001	133.44	5.56		280	—	ND<1.0	ND<1.0	ND<1.0	ND<1.0	350	TAME = 4.1 1,2-Dichloroethane=4.5 TBA = 47
4/5/2001	133.63	5.37		—	—	—	—	—	—	—	—
5/2/2001	133.60	5.40		—	—	—	—	—	—	—	—
5/22/2001	133.35	5.65		210	—	ND<1.0	ND<1.0	ND<1.0	ND<1.0	380	TAME = 4.5 1,2-Dichloroethane=6.2 TBA = 34
6/11/2001	132.14	6.86		—	—	—	—	—	—	—	—
7/6/2001	132.01	6.99		—	—	—	—	—	—	—	—
9/4/2001	130.39	8.61		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	350	TAME = 5.4 1,2-Dichloroethane=12 All others ND<0.50-500
11/29/2001	132.58	6.42		ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	220	TAME = 1.5 1,2-Dichloroethane=3.7 Methanol 58 All others ND<0.50-50
2/28/2002	133.39	5.61		780	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	300	TAME = 3.3 1,2-Dichloroethane=2.3 TBA = 38 All others ND<0.50-50
5/20/2002	133.35	5.65		450	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	450	TAME = 4.6 1,2-Dichloroethane=6.8 TBA = 21 All others ND<0.50-50
8/8/2002	130.53	8.47		270	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	410	TAME = 4.4 1,2-Dichloroethane=6.4 TBA = 12 All others ND<0.50-50
Monitoring well top of casings resurveyed 8/15/02											
12/6/2002	129.94	9.06		360	ND<50	ND<0.50	ND<0.50	ND<0.50	0.71	500	TBA=29 TAME=5.9 1,2-Dichloroethane=14 All others ND<1.0
2/24/2003	133.79	5.21		270	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	360	TAME=1.6 1,2-Dichloroethane=7.5 All others ND<1.0
5/15/2003	133.09	5.91		200	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	130	TBA=32 TAME=1.7 1,2-Dichloroethane=1.7 All others ND<1.0
8/11/2003	131.66	7.34		150	—	ND<0.50	ND<0.50	ND<0.50	0.81	190	TBA=23 TAME=1.6 1,2-Dichloroethane=2.3 All others ND<1.0
11/11/2003	130.89	8.11		170	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	250	TAME=2.4 1,2-Dichloroethane=5.8 All others ND<1.0-20
2/17/2004	132.03	6.97		360	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	440	TAME=4.1 All others ND<1.0-10
5/10/2004	133.19	5.81		250	—	1.4	ND<0.50	ND<0.50	4.3	160	TBA=47 All others ND<1.0
8/17/2004	130.57	8.43		470	—	ND<0.50	ND<0.50	ND<0.50	ND<0.50	430	TAME=4.4 All others ND<1.0-50

NOTES:

Wells re-surveyed 8/15/02 by R. Smith, LS, using Caltrans HPGN monument "D CA 01 NC" south of Rio Dell @ Jordan Road/Hwy 254 (Pepperwood) off-ramp

TABLE 2: HISTORIC GRADIENT DATA
 Former Rio Dell Texaco, 100 Wildwood Ave., Rio Dell, CA
 LACO No. 3554.03; LOP No. 12691

Date	North		South	
	Gradient	Slope	Gradient	Slope
6/30/2000	S68W	6.20%	---	---
7/31/2000	S78W	4.70%	---	---
8/30/2000	S33W	8.20%	---	---
9/22/2000	S52E	0.60%	---	---
10/26/2000	S40E	0.70%	---	---
11/24/2000	S34E	8.20%	S61E	6.40%
12/12/2000	S27E	8.30%	S45E	10.50%
1/12/2001	S33E	7.80%	S44E	8.80%
2/22/2001	S32E	6.70%	S40E	7.80%
4/5/2001	S30E	7.10%	S47E	8.40%
5/2/2001	S30E	6.80%	S48E	8.20%
5/22/2001	S41E	5.80%	S52E	6.20%
6/11/2001	S42E	6.20%	S46E	7.10%
7/6/2001	S34E	6.20%	S52E	7.00%
9/4/2001	S34E	5.50%	S54E	7.30%
11/29/2001	S26E	8.80%	---	---
2/28/2002	S35E	3.90%	---	---
5/20/2002	S63E	6.40%	---	---
8/8/2002	S35E	6.50%	---	---
12/6/2002	S35E	7.30%	---	---
2/24/2003	S35E	6.40%	---	---
5/15/2003	S35E	7.20%	---	---
8/11/2003	S30E	6.30%	---	---
11/11/2003	S31E	8.94%	---	---

Attachment 2
Field Notes



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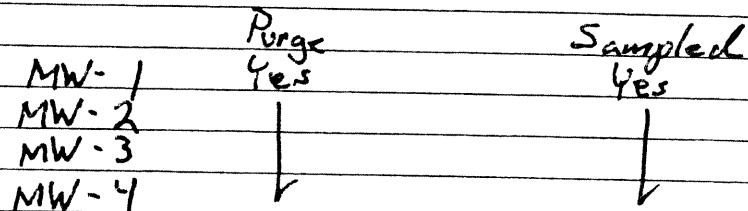
480 Hemsted Drive • Redding, CA 96002 • Tel: 530.221.5424 • FAX: 530.221.0135 • E-mail: shninfo@shn-redding.com
812 W. Wabash • Eureka, CA 95501 • Tel: 707.441.8855 • FAX: 707.441.8877 • E-mail: shninfo@shn-engr.com

DAILY FIELD REPORT

JOB NO	004323	
Page	of	
DAILY FIELD REPORT SEQUENCE NO		
PROJECT NAME	CLIENT/OWNER	
Rio Dell Texaco	Dorothy Bianchi	
GENERAL LOCATION OF WORK	OWNER/CLIENT REPRESENTATIVE	
Rio Dell, Ca	Dorothy Bianchi	
TYPE OF WORK	WEATHER	
Sampling	Partly Cloudy	
SOURCE & DESCRIPTION OF FILL MATERIAL	KEY PERSONS CONTACTED	
PROJECT ENGINEER/ SUPERVISOR		
Roland Rucher		
TECHNICIAN		
Dustin Tibbets		

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, & COMPACTING

- 10/13 On site. Open up all wells taking water levels and DO readings.
- 11/27 Purging MW-3 with a disposable bailer. All purge water was caught in 5 gal. buckets.
- 12/00 Sampled MW-3 with its bailer. Locked up well. MW- 3
- 12/04 Purging MW-2 with a disposable bailer. All purge water was caught in 5 gal. buckets.
- 12/30 Sampled MW-2 with its bailer. Locked up well. MW- 2
- 12/42 Purging MW-1 with a disposable bailer. All purge water was caught in 5 gal. buckets.
- 13/10 Sampled MW-1 with its bailer. Locked up well. MW- 1
- 1/2/20 Purging MW-1 with a disposable bailer. All purge water was caught in 5 gal. buckets.
- 1/3/20 Sampled MW-4 with its bailer. Locked up well. MW- 4
- 1/3/20 Clean and loaded up.
- 1/4/20 Off site. Note: All purge and decon water was transported to SHN's P.W.S.T. located at 812 W. Wabash ave. Eureka, CA 21 gal. total.





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EQUIPMENT CALIBRATION SHEET

Name:	<u>Dustin Tibbets</u>			
Project Name:	<u>Rio Dell Texaco</u>			
Reference No.:	<u>004323</u>			
Date:	<u>2/6/06</u>			
Equipment:	<input checked="" type="checkbox"/> pH & EC <input type="checkbox"/> PID <input type="checkbox"/> GTCO ₂ <input type="checkbox"/> GTTEL <input type="checkbox"/> Turbidity <input checked="" type="checkbox"/> Other <u>Dissolved Oxygen meter</u>			

Description of Calibration Procedure and Results:

pH + EC meter calibrated using a 2 buffer method
with a pH 7.00 and 4.01, meter was set exactly to
7.00 and 4.01 and conductivity was set at 700 umhos.

DO meter is self calibrating with the
Altimeter set at 1.



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Groundwater Elevations

Job No.:	004323	Name:	<i>Dustin Tibbets</i>	
Client:	Dorothy Bianchi	Date:	<i>2/6/06</i>	
Location:	Former Rio Dell Texaco	Weather:	<i>Partly Cloudy</i>	
Sample Location	Time of Reading	Top of Casing Elevation (feet)	Depth To Water (feet)	Water Surface Elevation (feet)
MW-1	<i>1035-</i>	139.06	<i>7.23</i>	<i>131.83</i>
MW-2	<i>1033</i>	139.83	<i>3.10</i>	<i>136.73</i>
MW-3	<i>1031</i>	139.87	<i>1.58</i>	<i>138.29</i>
MW-4	<i>1037</i>	139.00	<i>7.80</i>	<i>131.20</i>



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Water Sampling Data Sheet

Project Name:	Rio Dell Texaco	Date/Time:	2/6/06
Project No.:	004323	Sampler Name:	<u>David R. Paine</u> Dustin Tibbs
Location:	Rio Dell, CA	Sample Type:	Ground water
Well #:	MW-1	Weather	Partly Cloudy
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

$$\begin{array}{l} \text{Total Well Depth} \quad \text{Initial Depth to} \\ (\text{feet}) \quad \text{Water (feet)} \end{array} = \begin{array}{l} \text{Height of Water} \\ \text{Column (feet)} \end{array} \times \begin{array}{l} 0.163 \text{ gal/ft (2-inch well) /} \\ 0.653 \text{ gal/ft (4-inch well) } \end{array} = \begin{array}{l} 1 \text{ Casing Volume} \\ (\text{gal}) \end{array}$$

15.07	-	7.23	=	7.84	x	0.163	=	1.26 x 8 = 3.76
-------	---	------	---	------	---	-------	---	-----------------

Time	DO (ppm)	CO ₂ (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1109	5.02						0 gal	
1247		50					0.25 gal	
1250	↓			354	59.3°	6.16	1.5 gal	
1254	No Flow			353	60.°	6.20	2.25 gal	
1258	then cell			350	60.1°	6.26	4 gal	

Sample Time

Purge Method: Hand Bail

Total Volume Removed: 4 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-1	3 - 40ml vials	YES HCl	NCL	8260 list 1

Well Condition:

Remarks:

Recharged to 9.96 at sampling Time - 1300



Water Sampling Data Sheet

Project Name:	Rio Dell Texaco	Date/Time:	2/6/06
Project No.:	004323	Sampler Name:	David R. Paine ^{Dustin} Tablets
Location:	Rio Dell, CA	Sample Type:	Ground water
Well #:	MW-2	Weather	Partly cloudy
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

$$\begin{array}{ccccccccc} \text{Total Well Depth} & - & \text{Initial Depth to} & = & \text{Height of Water} & \times & 0.163 \text{ gal/ft (2-inch well) /} \\ (\text{feet}) & & \text{Water (feet)} & & \text{Column (feet)} & & 0.653 \text{ gal/ft (4-inch well)} & = & 1 \text{ Casing Volume} \\ 15.00 & - & 3.10 & = & 11.90 & \times & 0.163 & = & (\text{gal}) \\ & & & & & & & & 1.90 \times 3 = 5.71 \end{array}$$

Time	DO (ppm)	CO ₂ (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1102	3.27						0 gal	
1205		45					0.5 gal,	
1208	↓			446	56.4°	6.47	2 gal,	
1213	No Flow			486	57.2°	6.52	4 gal,	
1219	then cell			461	57.6°	6.55	5.75 gal.	
Sample Time								

Purge Method: Hand Bail

Total Volume Removed: 5.75 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-2	3 - 40ml vials	YES HCl	NCL	8260 list 1

Well Condition: _____

Remarks: _____

Recharged to 10.55 at sampling Time 1200



Water Sampling Data Sheet

Project Name:	<u>Rio Dell Texaco</u>	Date/Time:	<u>2/6/06</u>
Project No.:	<u>004323</u>	Sampler Name:	<u>David R. Paine D.J. Tubbets</u>
Location:	<u>Rio Dell, CA</u>	Sample Type:	<u>Ground water</u>
Well #:	<u>MW-3</u>	Weather	<u>Partly Cloudy</u>
Hydrocarbon Thickness/Depth (feet): <u>NA</u>		Key Needed:	<u>YES Dolphin</u>

Total Well Depth (feet)	Initial Depth to Water (feet)	=	Height of Water Column (feet)	×	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
<u>14.96</u>	<u>1.58</u>	=	<u>13.38</u>	×	<u>0.163</u>	=	<u>2.14 × 3 = 6.42</u>

Time	^{10⁵} DO (ppm)	CO ₂ (ppm)	ORP (mV)	EC (µS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1056	<u>3.50</u>						<u>0 gal</u>	
1134		<u>3.5</u>					<u>0.25 gal.</u>	
1138	<u>↓</u>			<u>217</u>	<u>58.5°</u>	<u>6.28</u>	<u>2.25 gal.</u>	
1142	<u>No Flow</u>			<u>212</u>	<u>59.1°</u>	<u>6.31</u>	<u>4.5 gal.</u>	
1146	<u>then cell</u>			<u>213</u>	<u>60°</u>	<u>6.34</u>	<u>6.5 gal.</u>	
<u>Sample Time</u>								

 Purge Method: Hand Bail

 Total Volume Removed: 6.5 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
<u>MW-3</u>	<u>3 - 40ml vials</u>	<u>YES HCl</u>	<u>NCL</u>	<u>8260 list 1</u>

Well Condition:

Remarks:

Recharged to 7.57 at sampling Time - 1200

Client Name: **RIO DELL TEXACO**

The water from your site: **100 WILDWOOD AVENUE, RIO DELL,
CA; LOP NO. 12691**

SHN ref #: **004323** Collected On: **11/4/2005**

Has been tested and certified as acceptable to be discharged into the City of
Eureka municipal sewer system.

Amount Discharged:

20 GALLONS

Date Discharged:

12/19/05

Certified by: **AARON MELODY**

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
City of Eureka Wastewater Discharge Permit #65

Attachment 3

Historic Monitoring Data Collected by SHN

Table 3-1
Historic Groundwater Elevations
Former Rio Dell Texaco; Rio Dell, California

Sample Location	Date	Top of Casing Elevation (feet) ¹	Depth to Water (feet) ²	Groundwater Elevation (feet) ¹
MW-1	02/11/05	139.06	7.98	131.08
	05/13/05		7.68	131.38
	08/23/05		9.36	129.70
	11/04/05		10.67	128.39
	02/06/06		7.23	131.83
MW-2	02/11/05	139.83	4.84	134.99
	05/13/05		4.43	135.40
	08/23/05		5.77	134.06
	11/04/05		6.90	132.93
	02/06/06		3.10	136.73
MW-3	02/11/05	139.87	2.50	137.37
	05/13/05		2.11	137.76
	08/23/05		4.71	135.16
	11/04/05		4.43	135.44
	02/06/06		1.58	138.29
MW-4	02/11/05	139.00	8.03	130.97
	05/13/05		8.88	130.12
	08/23/05		9.66	129.34
	11/04/05		8.92	130.08
	02/06/06		7.80	131.20

1. Referenced to NAVD88 (North American Vertical Datum 1988)
2. Below top of casing

Table 3-2
Historic Groundwater Analytical Results
Former Rio Dell Texaco; Rio Dell, California
(in ug/L)¹

Sample Location	Date	TPHG ²	B ²	T ²	E ²	X ²	MTBE ²	TBA ²	Dipe ²	ETBE ²	TAME ²
MW-1	02/11/05	57 ³	<0.50 ⁴	<0.50	<0.50	<0.50	46	<10	<1.0	<1.0	<1.0
	05/13/05	<50	<0.50	<0.50	<0.50	<0.50	67	<20	<1.0	<1.0	<1.0
	08/23/05	86 ³	<0.50	<0.50	<0.50	<0.50	96	<10	<1.0	<1.0	<1.0
	11/04/05	86 ³	<0.50	<0.50	<0.50	<0.50	94	<10	<1.0	<1.0	<1.0
	02/06/06	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<20	<1.0	<1.0	<1.0
	02/11/05	<50	<0.50	<0.50	<0.50	<0.50	17	<10	<1.0	<1.0	1.2
MW-2	05/13/05	<50	<0.50	<0.50	<0.50	<0.50	18	<10	<1.0	<1.0	2.0
	08/23/05	66 ³	<0.50	<0.50	<0.50	<0.50	60	<10	<1.0	<1.0	2.5
	11/04/05	<50	<0.50	<0.50	<0.50	<0.50	18	<10	<1.0	<1.0	1.6
	02/06/06	<50	<0.50	<0.50	<0.50	<0.50	13	<20	<1.0	<1.0	<1.0
	02/11/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	05/13/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
MW-3	08/23/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	11/04/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	02/06/06	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	02/11/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	05/13/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	08/23/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
MW-4	11/04/05	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<10	<1.0	<1.0	<1.0
	02/06/06	<50	<0.50	<0.50	<0.50	<0.50	<1.0	<20	<1.0	<1.0	<1.0
	02/11/05	500 ³	<0.50	<0.50	<0.50	<0.50	470	30	<1.0	<1.0	4.4
	05/13/05	570 ³	<0.50	<0.50	<0.50	<0.50	530	45	<1.0	<1.0	6.2
	08/23/05	490 ³	<0.50	<0.50	<0.50	<0.50	520	<10	<1.0	<1.0	5.6
	11/04/05	420 ³	<0.50	<0.50	<0.50	<0.50	410	<10	<1.0	<1.0	4.6
	02/06/06	440 ³	<0.50	<0.50	<0.50	<0.50	340	<20	<1.0	<1.0	4.6

1. ug/L: micrograms per Liter

2. Total Petroleum Hydrocarbons as Gasoline (TPHG); Benzene (B), Toluene (T), Ethylbenzene (E), total Xylenes (X); Methyl Tertiary-Butyl Ether (MTBE); Tertiary-Butyl Alcohol (TBA); Di-isopropyl Ether (Dipe); Ethyl Tertiary-Butyl Ether (ETBE); and Tertiary-Amyl Methyl Ether (TAME), analyzed in general accordance with United States Environmental Protection Agency (EPA) Method No. 8260B

3. The gasoline values are primarily from the reported gasoline additives.
4. <: Denotes a value that is "less than" the method detection limit.

Table 3-3
Historic DO, DCO₂, and ORP Measurement Results
Former Rio Dell Texaco; Rio Dell, California

Sample Location	Date	DO ¹ (ppm) ²	DCO ₂ ³ (ppm)	ORP ⁴ (mV) ⁵
MW-1	02/11/05	0.75	50	136
	05/13/05	1.44	60	241
	08/23/05	2.04	60	199
	11/04/05	NM	40	127
	02/06/06	5.02	50	NM
MW-2	02/11/05	0.67	60	155
	05/13/05	0.60	70	226
	08/23/05	0.75	50	183
	11/04/05	NM	60	146
	02/06/06	3.27	45	NM
MW-3	02/11/05	0.76	35	167
	05/13/05	1.16	40	207
	08/23/05	0.88	35	144
	11/04/05	NM	30	155
	02/06/06	3.50	35	NM
MW-4	02/11/05	0.85	160	98
	05/13/05	0.56	180	229
	08/23/05	0.76	130	188
	11/04/05	NM	100	131
	02/06/06	4.18	200	NM

1. DO: Dissolved Oxygen, field measured using portable instrumentation
2. ppm: parts per million
3. DCO₂: Dissolved Carbon Dioxide, field measured using a field test kit
4. ORP: Oxidation-Reduction Potential measured using portable instrumentation
5. mV: millivolts

Table 3-4
Groundwater Geochemical Analytical Results, August 23, 2005
Former Rio Dell Texaco; Rio Dell, California

Sample Location	Dissolved Iron (ug/L) ¹	Dissolved Manganese (ug/L)	Nitrate (mg/L) ²	Sulfate (mg/L)	Total Alkalinity (mg/L)
MW-1	150	24	3.0	18	170
MW-2	<100 ³	1,700	0.15	34	250
MW-3	<100	51	0.97	24	97
MW-4	810	1,800	<0.10	7.5	460

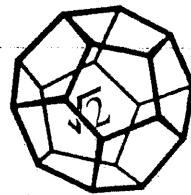
1. ug/L: micrograms per liter

2. mg/L: milligrams per liter

3. <: Denotes a value that is "less than" the method detection limit.

Attachment 4

Laboratory Analytical Report



**NORTH COAST
LABORATORIES LTD.**

February 17, 2006

SHN Consulting Engineers and Geologists
812 West Wabash Avenue
Eureka, CA 95501

Attn: Roland Rueber

RE: 004323 Rio Dell Texaco

Order No.: 0602115
Invoice No.: 56301
PO No.:
ELAP No. 1247-Expires July 2006

SAMPLE IDENTIFICATION

Fraction Client Sample Description

01A MW-3
02A MW-2
03A MW-1
04A MW-4

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

REPORT CERTIFIED BY

Colleen Blackstone ssm

Laboratory Supervisor(s)

QA Unit

Jesse G. Chaney, Jr. (FOL ILC)

Jesse G. Chaney, Jr.
Laboratory Director

CLIENT: SHN Consulting Engineers and Geologists
Project: 004323 Rio Dell Texaco
Lab Order: 0602115

CASE NARRATIVE**Gasoline Components/Additives:**

The reporting limit for TBA was raised due to loss of instrument sensitivity.

The gasoline value for sample MW-4 is primarily from the reported gasoline additives.

The surrogate recoveries for the method blank and all samples were below the lower acceptance limit. The response of the reporting limit standard was such that the analytes would have been detected even with the lower recovery; therefore, the data were accepted.

The relative percent difference (RPD) for the laboratory control samples was above the acceptance limit for TBA. This indicates that the results could be variable. Since there were no detectable levels of analyte in the sample, the data were accepted.

Date: 17-Feb-06
WorkOrder: 0602115

ANALYTICAL REPORT

Client Sample ID: MW-3
Lab ID: 0602115-01A

Received: 2/7/06

Collected: 2/6/06 12:00

Test Name: Gasoline Components/Additives

Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		2/16/06
Tert-butyl alcohol (TBA)	ND	20	µg/L	1.0		2/16/06
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		2/16/06
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		2/16/06
Benzene	ND	0.50	µg/L	1.0		2/16/06
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		2/16/06
Toluene	ND	0.50	µg/L	1.0		2/16/06
Ethylbenzene	ND	0.50	µg/L	1.0		2/16/06
m,p-Xylene	ND	0.50	µg/L	1.0		2/16/06
o-Xylene	ND	0.50	µg/L	1.0		2/16/06
Surrogate: 1,4-Dichlorobenzene-d4	77.7	80.8-139	% Rec	1.0		2/16/06

Test Name: TPH as Gasoline

Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		2/16/06

Client Sample ID: MW-2
Lab ID: 0602115-02A

Received: 2/7/06

Collected: 2/6/06 12:30

Test Name: Gasoline Components/Additives

Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	13	1.0	µg/L	1.0		2/16/06
Tert-butyl alcohol (TBA)	ND	20	µg/L	1.0		2/16/06
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		2/16/06
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		2/16/06
Benzene	ND	0.50	µg/L	1.0		2/16/06
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		2/16/06
Toluene	ND	0.50	µg/L	1.0		2/16/06
Ethylbenzene	ND	0.50	µg/L	1.0		2/16/06
m,p-Xylene	ND	0.50	µg/L	1.0		2/16/06
o-Xylene	ND	0.50	µg/L	1.0		2/16/06
Surrogate: 1,4-Dichlorobenzene-d4	74.4	80.8-139	% Rec	1.0		2/16/06

Test Name: TPH as Gasoline

Reference: LUFT/EPA 8260B Modified

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND	50	µg/L	1.0		2/16/06

Date: 17-Feb-06
WorkOrder: 0602115

ANALYTICAL REPORT

Client Sample ID: MW-1
Lab ID: 0602115-03A

Received: 2/7/06

Collected: 2/6/06 13:10

Test Name: Gasoline Components/Additives

Reference: LUFT/EPA 8260B Modified

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1.0		2/16/06
Tert-butyl alcohol (TBA)	ND	20	µg/L	1.0		2/16/06
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		2/16/06
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		2/16/06
Benzene	ND	0.50	µg/L	1.0		2/16/06
Tert-amyl methyl ether (TAME)	ND	1.0	µg/L	1.0		2/16/06
Toluene	ND	0.50	µg/L	1.0		2/16/06
Ethylbenzene	ND	0.50	µg/L	1.0		2/16/06
m,p-Xylene	ND	0.50	µg/L	1.0		2/16/06
o-Xylene	ND	0.50	µg/L	1.0		2/16/06
Surrogate: 1,4-Dichlorobenzene-d4	78.1	80.8-139	% Rec	1.0		2/16/06

Test Name: TPH as Gasoline

Reference: LUFT/EPA 8260B Modified

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gasoline	ND	50	µg/L	1.0		2/16/06

Client Sample ID: MW-4

Received: 2/7/06

Collected: 2/6/06 13:50

Lab ID: 0602115-04A

Test Name: Gasoline Components/Additives

Reference: LUFT/EPA 8260B Modified

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
Methyl tert-butyl ether (MTBE)	340	50	µg/L	50		2/15/06
Tert-butyl alcohol (TBA)	ND	20	µg/L	1.0		2/16/06
Di-isopropyl ether (DIPE)	ND	1.0	µg/L	1.0		2/16/06
Ethyl tert-butyl ether (ETBE)	ND	1.0	µg/L	1.0		2/16/06
Benzene	ND	0.50	µg/L	1.0		2/16/06
Tert-amyl methyl ether (TAME)	4.6	1.0	µg/L	1.0		2/16/06
Toluene	ND	0.50	µg/L	1.0		2/16/06
Ethylbenzene	ND	0.50	µg/L	1.0		2/16/06
m,p-Xylene	ND	0.50	µg/L	1.0		2/16/06
o-Xylene	ND	0.50	µg/L	1.0		2/16/06
Surrogate: 1,4-Dichlorobenzene-d4	76.2	80.8-139	% Rec	1.0		2/16/06

Test Name: TPH as Gasoline

Reference: LUFT/EPA 8260B Modified

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gasoline	440	50	µg/L	1.0		2/16/06

Page 2 of 2

North Coast Laboratories, Ltd.

Date: 17-Feb-06

CLIENT: SHN Consulting Engineers and Geologists

Work Order: 0602115

Project: 004323 Rio Dell Texaco

QC SUMMARY REPORT

Method Blank

Sample ID: MB_021506	Batch ID: R39770	Test Code: 8260OXYW	Units: µg/L	Analysis Date: 2/15/06 3:09:00 AM			Prep Date:				
Client ID:	Run ID:	ORGCMS2_060215B		SeqNo:	571343						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	% RPD	RPD Limit	Qual
Methyl tert-butyl ether (MTBE)	ND	1.0									
Tert-butyl alcohol (TBA)	ND	20									
Di-isopropyl ether (DIPE)	ND	1.0									
Ethyl tert-butyl ether (ETBE)	ND	1.0									J
Benzene	0.1153	0.50									
Tert-amyl methyl ether (TAME)	ND	1.0									
Toluene	ND	0.50									
Ethybenzene	0.2229	0.50									J
m,p-Xylene	0.2785	0.50									J
o-Xylene	0.2071	0.50									J
1,4-Dichlorobenzene-d4	0.718	0.10	1.00	0	71.8%	81	139	0	S		

Sample ID: MB_021506	Batch ID: R39769	Test Code: GASW-MS	Units: µg/L	Analysis Date: 2/15/06 3:09:00 AM			Prep Date:				
Client ID:	Run ID:	ORGCMS2_060215A		SeqNo:	571323						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	% RPD	RPD Limit	Qual
TPHC Gasoline	21.15	50									J

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 17-Feb-06

CLIENT: SHN Consulting Engineers and Geologists

Work Order: 0602115

Project: 004323 Rio Dell Texaco

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID: LCS-06102		Batch ID: R39770		Test Code: 82600XYW		Units: µg/L		Analysis Date: 2/15/06 12:09:00 PM		Prep Date:			
Client ID:		Run ID:		ORGCMS2_060215B		% Rec	SPK Ref Val	LowLimit	HighLimit	RPD Ref Val	% RPD	RPD Limit	Qual
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec							
Methyl tert-butyl ether (MTBE)	19.06	1.0	20.0	0	95.3%	80	120	0	0	0	0	0	
Terf-butyl alcohol (TBA)	443.9	20	400	0	111%	25	162	0	0	0	0	0	
Di-isopropyl ether (DIPE)	19.90	1.0	20.0	0	99.5%	80	120	0	0	0	0	0	
Ethyl tert-butyl ether (ETBE)	20.48	1.0	20.0	0	102%	77	120	0	0	0	0	0	
Benzene	19.12	0.50	20.0	0	95.6%	78	117	0	0	0	0	0	
Tert-amyI methyl ether (TAME)	19.35	1.0	20.0	0	96.7%	64	136	0	0	0	0	0	
Toluene	18.00	0.50	20.0	0	90.0%	80	120	0	0	0	0	0	
Ethylbenzene	19.64	0.50	20.0	0	98.2%	80	120	0	0	0	0	0	
m,p-Xylene	38.77	0.50	40.0	0	96.9%	80	120	0	0	0	0	0	
o-Xylene	19.59	0.50	20.0	0	97.9%	80	120	0	0	0	0	0	
1,4-Dichlorobenzene-d4	0.933	0.10	1.00	0	93.3%	81	139	0	0	0	0	0	
Sample ID: LcsD-06102		Batch ID: R39770		Test Code: 82600XYW		Units: µg/L		Analysis Date: 2/15/06 8:09:00 AM		Prep Date:			
Client ID:		Run ID:		ORGCMS2_060215B		% Rec	SPK Ref Val	LowLimit	HighLimit	RPD Ref Val	% RPD	RPD Limit	Qual
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec							
Methyl tert-butyl ether (MTBE)	16.53	1.0	20.0	0	82.7%	80	120	19.1	14.2%	20	20	R	
Terf-butyl alcohol (TBA)	187.8	20	400	0	47.0%	25	162	444	81.1%	20	20		
Di-isopropyl ether (DIPE)	18.13	1.0	20.0	0	90.6%	80	120	19.9	9.34%	20	20		
Ethyl tert-butyl ether (ETBE)	17.03	1.0	20.0	0	85.1%	77	120	20.5	18.4%	20	20		
Benzene	19.88	0.50	20.0	0	99.4%	78	117	19.1	3.94%	20	20		
Tert-amyI methyl ether (TAME)	16.54	1.0	20.0	0	82.7%	64	136	19.4	15.6%	20	20		
Toluene	17.77	0.50	20.0	0	88.8%	80	120	18.0	1.31%	20	20		
Ethylbenzene	20.40	0.50	20.0	0	102%	80	120	19.6	3.78%	20	20		
m,p-Xylene	37.93	0.50	40.0	0	94.8%	80	120	38.8	2.20%	20	20		
o-Xylene	20.81	0.50	20.0	0	104%	80	120	19.6	6.07%	20	20		
1,4-Dichlorobenzene-d4	1.08	0.10	1.00	0	108%	81	139	0.933	14.7%	20	20		

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0602115
Project: 004323 Rio Dell Texaco

QC SUMMARY REPORT
Laboratory Control Spike

Sample ID:	LCS-06103	Batch ID:	R39769	Test Code:	GASW-MS	Units:	µg/L	Analysis Date:	2/15/06 1:39:00 AM	Prep Date:				
Client ID:				Run ID:	ORGCMS2_060215A			SeqNo:	571321					
Analyte				Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline			1,129	50	1,000	0	113%	80	120	0				
Sample ID:	LCSD-06103	Batch ID:	R39769	Test Code:	GASW-MS	Units:	µg/L	Analysis Date:	2/15/06 8:39:00 AM	Prep Date:				
Client ID:				Run ID:	ORGCMS2_060215A		<th>SeqNo:</th> <td>571330</td> <td></td>	SeqNo:	571330					
Analyte				Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline			1,125	50	1,000	0	113%	80	120	1,130	0.331%	20		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

